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EXAMINER

SENI, BEHROOZ M

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Paper No. 15

Application Number: 09/394,428  
Filing Date: September 13, 1999  
Appellant(s): CHRISTOPOULOS ET AL.

John R. Lastova (Reg. No. 33,149)  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed November 14, 2003.

A statement identifying the real party in interest is contained in the brief.

**(1) *Real Party in Interest***

A statement identifying the real party in interest is contained in the brief.

**(2) *Related Appeals and Interferences***

**(2) *Related Appeals and Interferences***

A statement identifying that there are no related appeals and interferences, which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

**(3) *Status of Claims***

The statement of the status of the claims contained in the brief is correct.

**(4) *Status of Amendments After Final***

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) *Summary of Invention***

The summary of invention contained in the brief is correct.

**(6) *Issues***

The appellant's statement of the issues in the brief is correct.

**(7) *Grouping of Claims***

Appellant's brief includes a statement that claims 11,14,16 and 19 stand or fall with claim 2.

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**(8) Claims Appealed**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(9) Prior Art of Record**

5,107,345	LEE	4-1992
5,870,146	ZHU	1-1997

**(10) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 2, 11, 14, 16 and 19, are rejected under 35 U.S.C. 102(b) as being anticipated by Lee (US 5,107,345).

Regarding claim 2, Lee '345 discloses a discrete cosine transform (DCT) operation (i.e. abstract, lines 2 – 3), and the limitations “first processing circuitry for calculating a DCT of length  $N/2 \times N/2$ ,  $N$  being a positive, even integer, to produce four sequences of coefficients” reads on (fig. 1, 10b, which is  $N/2 \times N/2$  (8x8), to produce four sequence of coefficients QC8 of fig. 1, and second processing circuitry for “calculating a DCT of length  $N \times N$  directly from the four sequences of coefficients”, reads on (fig. 2, MUX (second processing), that calculates/reconstruct the DCT of the original  $N \times N$  from QC8).

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Regarding claims 11, 16 and 19, Lee '345 discloses the claim limitation "under-sampling compressed frames by a certain factor in each dimension" reads on sub-sampling components by a factor of 4 "same as certain factor" in horizontal and vertical dimensions (i.e. col. 6, lines 61 – 62), and as for "decoding part in claim 16" see (i.e. fig. 6), and as for the limitations claimed "calculating DCT of length  $N \times N$  directly from 4 adjacent DCT coefficients block of size  $N/2 \times N/2$  of the digitalized image ....." is similar to claim 2, see discussion regarding claim 2 please.

Regarding claim 14, limitations claimed are substantially similar to claims 1 and 11, and are the method of the processing, therefore the grounds for rejecting claims 1 and 11 also apply here.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 22 – 23 and 25 - 26, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US 5,107,345) in view of Zhu (US 5,870,146).

Regarding claims 22 and 23, Lee '345 discloses a discrete cosine transform (DCT) operation for transmission and calculating a DCT of length  $N/2 \times N/2 \times N \times N$ , groups of 4 adjacent blocks as discussed above with respect to claims 2 and 11. as for the additional limitation "extracting coefficients ....." as discussed above, Lee breaks the blocks to smaller blocks and performs/calculate the DCT coefficients, therefore

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extracting the respective coefficients to form the block would have been inherent in the process, and as for “selecting from the calculated coefficients, coefficients of the lowest frequencies” reads on (i.e. col. 2, lines 40+ of Lee), and non-overlapping blocks  $N \times N$ , reads on (i.e. col. 4, lines 9 of Lee).

Lee '345 fails to explicitly teach the use of “transcoder”. However, the above claimed limitation is well known in the art as evidenced by Zhu '146, in particular (i.e. fig. 6, transcoder 40, cols. 2 - 3, lines 64+) teaches transcoder convert the rate of bit-stream to the desired bit-stream based on the user or channel.

In view of the above, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system of Lee '345, as taught by Zhu '146 for the benefit of scaling based on the user protocol.

Examiner Note; DCT is a block converter, thus converts blocks based on the desired ratio and application (i.e.  $N \times N$  or  $N/2 \times N/2$  or  $N \times M$ ,  $N$  is not equal to  $M$  and etc.).

Regarding claims 25 – 26, the claimed limitations are substantially similar to claims 22 – 23, therefore the grounds for rejecting claims 22 – 23 also apply here. Furthermore, for the additional limitation as claimed “multi-node control unit”, reads on Zhu's multipoint control unit (MCU when multiple terminals are involved, please see (i.e. col. 3, lines 6+ of Zhu '146).

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**(11) Response to Argument**

*Appellant's Arguments*

*In regarding claims 2, 11, 14, 16, 19, 22, 23, 25 and 26, appellant alleged that (Paper No. 14, page 7, lines 6 – 2 from bottom of the page) Lee '345 does not teach "calculating 16 x 16 DCT coefficients from 8 x 8 DCT coefficients or calculating higher DCT coefficients from lower DCT coefficients" and in page 8, lines 12 – 13 "calculating a DCT of length 16 x 16 directly from four sequences of DCT coefficients of length 8 x 8".*

*In response, with respect to appellant's argument, Lee '345 discloses dividing the block into sub-blocks and performing DCT (calculating) by properly choosing the block size based on the image characteristics being dictate by the process, and reconstruct back to the original block of  $N \times N$ . For example figures 1 and 6, where a 16 x 16 size block is broken-down into up 4(8 x 8) (i.e.  $N/2$ ) or 16(4 x 4) (i.e.  $N/4$ ) or combination thereof, and the reconstruction is selecting/choosing the block size based on the image characteristics back to the original block (fig. 1, 10b, and QC8) where a 16 x 16 (4 x (8 x 8)) blocks are produced from 8 x 8 DCT block (10b).*

*Appellant alleged that (Paper No. 14, page 8, section D.) Lee '345 does not teach "calculating DCTs for blocks of size  $N/2 \times N/2$ " see discussion above, and "collecting the extracted coefficient for four adjacent blocks of size  $N/2 \times N/2$ " and "calculating, from the collected coefficient, coefficients of the DCTs for the blocks of size  $N \times N$  using DCTs and IDCTs of size  $N/2 \times N/2$  and without using DCTs or IDCTs of length  $N \times N$ ".*

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*In response, with respect to appellant's argument, as explained above Lee '345 divides the block to smaller block and performs DCT coefficients on the sub-blocks, and select/choose sub-blocks to reconstruct the original block therefore extracting the respective coefficients to form the block would have been inherent in the process. Furthermore, Lee '345 does not always use a 16 x 16 block, also figs. 1 and 6, shows the DCT and IDCT process.*

*Appellant alleged that (Paper No. 14, page 10, whole page, claims 23 and 25) Lee '345 fails to teach the limitations as claimed, "collecting the extracted coefficients for four adjacent blocks of size  $N \times N$ , the groups of four adjacent blocks forming together non-overlapping blocks of size  $2N \times 2N$ , and selecting from the collected extracted coefficients for each block of size  $N \times N$  of each of the groups of four adjacent blocks of the size  $N \times N$ , coefficients of  $N/2 \times N/2$  lowest frequency, and calculating from the selected coefficients for each of the groups, coefficients of the DCT for a block of size  $N \times N$  using DCTs and IDCTs of length  $N/2$  and without using DCTs or IDCTs of length  $N$  or using DCTs and IDCTs for blocks of size  $N/2 \times N/2$  and without using DCTs or IDCTs of length  $N \times N$ , and transmitting to the at least one user a bit stream including only the calculated coefficients.*

*In response, with respect to appellant's argument, as discussed above, Lee '345 teaches a discrete cosine transform (DCT) operation and calculates a DCT of length  $N/2 \times N/2$  and/or  $N \times N$  group of 4 adjacent blocks and selecting/choosing the block size based on the image characteristics for transmission purpose. As for the "extracting the coefficients", extracting the respective coefficients to form the block would have been*



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*inherent in the process of performing (calculating) the DCT coefficients. As for "selecting part", (col. 2, lines 40 – 50) teaches the assignment and selection of DCT coefficient values for providing the proper output, and the "non-overlapping blocks" reads on Lee '345 (col. 4, lines 9 – 10).*

*Appellant alleged that (Paper No. 14, page 11, lines 1) Lee '345 fails to teach "multi-node control unit".*

*In response, with respect to appellant's argument, Examiner agrees with applicant argument. However as for "multi-node control unit" examiner relied on Zhu '146 (col. 3, lines 6 – 7) teaches (MCU, multi point control unit).*

Respectfully submitted,

Behrooz Senfi

Examiner

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B. S. B. S.


January 8, 2004

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